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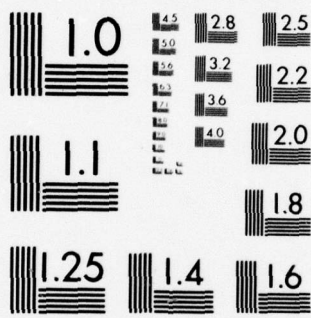
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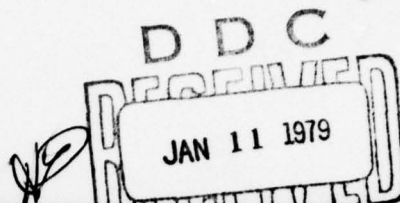
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NPRDC SR 79-6

DECEMBER 1978

**MILITARY PRODUCTIVITY AND WORK MOTIVATION:
CONFERENCE RECOMMENDATIONS**

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MILITARY PRODUCTIVITY AND WORK MOTIVATION
CONFERENCE RECOMMENDATIONS.

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Final Repts.

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FOREWORD

This document summarizes common productivity problems identified at a conference on military productivity and work motivation, and provides recommendations for solving these problems. The conference, which was held 10-12 April 1978, was cosponsored by the Navy Personnel Research and Development Center and the Navy's Office of Civilian Personnel (OCP). It was conducted in cooperation with the Work in America Institute, Inc., an organization whose objective is to disseminate new ideas in the world on orf work that will contribute to both productivity and the quality of work life. Readers interested in a detailed account of the conference should consult the conference proceedings, NPRDC Special Report 78-15 of August 1978 (AD-A057 760).

Appreciation is expressed to all those individuals who participated in the conference and contributed to its success. Particular appreciation is expressed to the following, who served as leaders of workshop groups:

- Dr. Karlene Roberts, School of Business, University of California, Berkeley
- CAPT Robert Gregory, USAF, Air Force Directorate of Personnel Plans
- CDR Beth Coye, USN, Personnel Support Activity, NTC, San Diego
- Dr. H. Wallace Sinaiko, Smithsonian Institution
- Dr. Linda Doherty, NAVPERSRANDCEN
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INTRODUCTION

Problem

Experts frequently differ in their opinion of how to strengthen the United States economy. There is, however, almost total agreement that economic growth and the national standard of living cannot be improved unless productivity is increased. Concern about productivity has increased dramatically in recent years, particularly since the rate of productivity improvement in the U.S. has been surpassed by that of six other major industrial nations. As a result, the National Productivity and Quality of Working Life Act (Public Law 94-136 of 1975) was enacted to focus attention on this problem.

While this concern is expressed for the entire economy, Congress has given special attention to productivity in the public sector, particularly the part involving the military services. When the public sector consumes a third of the gross national product, as ours does, it must improve its productivity if it is not to be a drag on the total economy. To address this problem, the Secretary of Defense issued DoD Directive 5010.31 of 4 August 1975, Productivity Enhancement Measurement and Evaluation--Policies and Responsibilities, and DoD Instruction 5010.34 of 4 August 1975, Productivity Enhancement Measurement and Evaluation--Operating Guidelines and Reporting Instructions, to establish policies, responsibilities, and procedures for a permanent productivity program.

As in the past, the greatest improvements in productivity will undoubtedly result from advances in technology. The development and implementation of these advances, however, depend on a high level of workforce motivation. Unfortunately, relatively little attention has been paid to the effects of workforce motivation on productivity improvement in the military. Instead, productivity initiatives have been directed toward (1) productivity measurement and reporting, (2) methods and standards improvement, or (3) capital investment. For this reason, the Navy Personnel Research and Development Center and the Navy's Office of Civilian Personnel cosponsored a conference entitled "Productivity and Work Motivation in the Navy and Other Military Services." The conference was held in New York City, 10-12 April 1978.

Purpose and Description of the Conference

The purpose of that conference was to bring together a diverse group of people actively concerned about productivity. In addition to representatives from all the military services, conference attendees came from the Department of Defense, General Accounting Office, Office of Management and Budget, Civil Service Commission, Smithsonian Institution, National Center for Productivity and Quality of Work Life, associations of civilian supervisors in the government, private business organizations, and academic institutions.

For the purpose of the conference, the term productivity was defined very broadly to include performance in (1) industrial activities, where output is often concrete, and in (2) administrative, research and development, and clerical functions, where the output is difficult to specify, as well as military performance in operational units, where actual effectiveness is difficult to measure during peace time. Representatives from military and civilian organizations met in an effort to identify commonly occurring productivity problems and to

generate ideas that would lead to workable programs for increasing productivity. Particular emphasis was given to the impact that worker motivation has in improving productivity.

In addition to the formal presentations, conference members met in working groups to consider problems in specialized functional areas and possible solutions for those problems. Each working group reported its conclusions on the last day of the conference. The formal presentations and summaries of the working group reports are presented in NPRDC SR 78-15, Military Productivity and Work Motivation: Conference Proceedings (AD-A057 760).

Purpose of this Report

One of the most important objectives of the productivity conference was to have a positive impact on the productivity improvement activities of the military services, particularly the Navy. Therefore, its real success will be measured ultimately by the value of the productivity actions or programs undertaken or improved because of the conference.

In an attempt to help realize that goal, this document has been prepared. It presents brief descriptions of problem areas identified at the conference and recommendations that, in the judgment of the authors, offer the greatest potential for resolving those problems. Although the recommendations relate specifically to problems within the Navy, they should be useful to other government agencies as well. While they vary in their degree of specificity, they are not intended to provide the details necessary for actual implementation of productivity improvement programs but, rather, to provide policymakers and managers with examples of such programs. Further, if the recommendations contained in this report are to be implemented, appropriate organizations and individuals in the Navy will have to be assigned responsibility for doing so. Without this last critical step, implementation is unlikely, regardless of the usefulness of the recommendations.

Important Events Since the Conference

Since the conference was held, two major events have occurred that will play a significant role in the development of productivity programs in the Navy. First, the Secretary of the Navy has issued SECNAV Instruction 5200.31 of 27 June 1978, which establishes policy on and provides guidance for the Navy's productivity improvement program, and assigns broad responsibilities for conduct of the program. This instruction provides for (1) the establishment of a Productivity Coordination Council composed of nine top level executives in the Navy and (2) the appointment of a Department of Navy Productivity Principal in the Office of the Assistant Secretary of the Navy (Manpower, Reserve Affairs and Logistics). The Coordination Council is responsible for ensuring that program objectives and policies are effectively implemented and for assisting the ASN(MRA&L) in establishing productivity programs. The Productivity Principal is responsible for coordinating the Navy's program with DoD and other government agencies and for working with Navy and Marine Corps representatives

in developing specific productivity programs. Second, the Civil Service Reform Act of 1978 has become law, giving increased emphasis to productivity and allowing greater flexibility in adopting productivity programs and in rewarding productivity enhancement efforts. To implement Civil Service reform in the Navy, the Secretary of the Navy has established a number of working groups, one of which is to address the issue of productivity. This group could be involved in decisions regarding assignment of responsibilities with regard to productivity enhancement. More will be said about these events in later sections of this report.

Problem Areas Identified

Each of the conference working groups focused on specialized functions in the military to direct attention to specific motivational and productivity problems and their possible solutions. It is especially interesting to note that there was substantial commonality among the different working groups as to the problems identified. These problems can be grouped as follows:

1. Productivity program management.
2. Productivity measurement.
3. Rewards and incentives for productivity improvement.
4. Management and supervision.
5. Management control systems.
6. Resources and capital investment.
7. Research and development.

In the remaining sections of this report, each of these problem areas is discussed, and recommendations are made to resolve the problems identified. Finally, a brief summary of recommended actions is provided.

PRODUCTIVITY PROGRAM MANAGEMENT

Organizational goals cannot be accomplished without careful and systematic application of organizational resources. Thus, the Navy's productivity program must have effective management if productivity is to be improved significantly. SECNAV Instruction 5200.31 establishes an excellent base for building an effective productivity program. The substantial benefits and cost savings that can be realized from such a program, however, ultimately depend upon program management.

With this in mind, the following recommendations are offered.

1. The Navy's productivity program must have the support and active involvement of the Navy's top military and civilian officials.

Whenever a program is initiated in a large organization such as the Navy, a certain amount of inertia must be overcome. Often members of the organization adopt a "wait and see" approach to the program to determine whether or not it is credible or just "another paper program." High level support, beginning at the Secretariat level, is necessary to overcome this inertia.

The actions taken by the newly formed Productivity Coordination Council will be especially important in establishing the credibility of the productivity program. Support can be demonstrated in a number of ways. One such action would be for the Secretary of the Navy to send a message for all Navy personnel and employees announcing the program and emphasizing its importance and priority. Ultimately, however, support for the program must be demonstrated by two types of actions. The first is the allocation of sufficient resources so that the program can have a visible effect. The second is the development of new policies and the alteration of existing ones to encourage actual productivity enhancement activities. Thus, it is essential that those with major responsibilities in the Navy's Productivity Program be provided with sufficient resources and authority to develop a program with credibility and impact.

2. The productivity program should be considered and developed as a long-term program.

In large and complex organizations, such as the Navy, "quick fixes" are unlikely to result in lasting improvement. Although there are areas where immediate improvements can be made, substantial and lasting improvement for the total organization can be achieved only through a gradual process. It is also important to recognize that productivity improvement is not a "fire drill" but, rather, must be an integral part of regular organizational activity. Once again, resource allocation and high level support are most important in fostering this orientation. In addition, an organized structure must be provided that can maintain continuity despite personnel rotation and turnover. While this structure need not be large, it must have access to top management in each major command and activity. This structure is not intended to "carry out" productivity programs but, rather, to support line authority in doing so. Productivity programs are unlikely to succeed unless line authority accepts the responsibility for productivity improvement and assigns this task a high priority.

Productivity programs are more successful when productivity data can be expertly analyzed and interpreted. Those trained in the analysis and interpretation of productivity data can identify and adjust for problems in the data collection and reporting process--problems that could invalidate productivity indices and consequently nullify their value in directing and evaluating productivity programs. When such expertise is not available to commands and activities, it must be developed to support line authority so that productivity can be monitored and meaningful productivity goals established. This can be done either by training present staff members or by hiring specialists in productivity data analysis.

3. Productivity experimentation and inventiveness should be encouraged.

It is unlikely that progress can be made without taking some risks. Thus, experimentation should be encouraged so that techniques leading to real productivity improvement can be identified. This experimentation can also determine whether productivity programs that have been successful in some situations (e.g., wage incentives) are applicable to others. Since some of this experimentation must be conducted with operating military organizations, expertise in developing, evaluating, and interpreting experimental programs must be made available.

Within the Federal civilian workforce, this experimental approach may be assisted by provisions included in the Civil Service Reform Act of 1978. These provisions allow a waiver of regulations and policy for approved demonstrations designed to improve productivity, thereby providing greater flexibility in trying novel approaches to productivity improvement. For example, current hiring regulations could be waived for an experimental period in selected organizations to test whether alternative hiring practices would increase productivity.

4. Both employees and management should participate in the development of productivity programs.

Productivity programs are more likely to succeed when personnel throughout the organization are involved in their development and implementation. Research evidence indicates that employees are less suspicious and make more frequent use of programs that they helped to develop. Further, when employees believe they will benefit from the programs, they will be more motivated to make them successful. Employee suggestion programs, when properly run, can also foster employee participation; the employee's first-hand knowledge of their jobs can be very useful in developing productivity improvements. Finally, union leaders can be extremely helpful if they can be convinced that productivity improvements will benefit union members.

PRODUCTIVITY MEASUREMENT

Before productivity improvements can be demonstrated, productivity itself must be defined and measured. These measures then serve as the basis for setting productivity goals and monitoring progress. The impact of such measurement upon an organization depends, to a large degree, upon the acceptance of the measures as good indices of the organization's performance. When productivity measures do not meet this criterion, they are often ignored. Therefore, decisions regarding the definition and measurement of productivity are extremely important. Unfortunately, making such decisions can be troublesome even when the unit of output can be easily specified. When the unit is difficult to specify or when there are many kinds of outputs to be considered, the task often becomes extremely difficult.

Productivity measures, nevertheless, can be developed for many Navy organizations or, at least, for most functions within them. The task is to make them as useful as possible. The following recommendations should be helpful in developing such measures:

1. A board of experts in productivity measurement should be established to develop and disseminate definitions, guidelines, and suggestions for measuring productivity in Navy organizations.

Inconsistent and sometimes contradictory definitions and measures of productivity have been the subject of much discussion and confusion. Even knowledgeable people often use terms such as performance, effectiveness, efficiency, production, and productivity interchangeably. Generally, this practice poses no major problem; when one attempts to develop consistent and comparable measures that can be monitored over time, however, a lack of precision in definition can cause a great deal of confusion. Thus, the definitions of terms and concepts must be agreed upon before useful productivity measures can be developed.

It is recommended that a board of experts in productivity measurement be established to develop and disseminate (1) definitions of terms related to productivity, (2) guidelines for developing appropriate measures, and (3) specific examples of appropriate and inappropriate measures. SECNAV Instruction 5200.31, which sets forth the Navy's Productivity Improvement Program, includes a glossary of terms that can be useful to the proposed board. For example, productivity is defined as the efficiency with which an organization uses its resources to provide its final outputs; and efficiency, as the ratio of goods and services output to the resources (labor, capital, etc.) consumed. This board, however, must also deal with the definition and measurement of other concepts, such as operational "readiness." These definitions, along with specific guidance on how to develop appropriate measures of productivity and related concepts, should be coordinated with the Bureau of Labor Statistics, the Office of Management and Budget, the General Accounting Office, the new Office of Personnel Management, the Federal Productivity Council, and the Department of Defense productivity program.

The specific examples of appropriate and inappropriate measures of productivity should be representative of a wide variety of tasks performed,

whether by military or civilian personnel, in both fleet and shore activities. Examples of tasks for which productivity measurement is currently infeasible should also be provided. Finally, a plan and a timetable, based upon the participation of individual Navy organizations, should be prepared.

From the above, it should be apparent that productivity can be measured in a number of ways--both within an organization and between different kinds of organizations.

2. The organizations or units being measured should participate in the development and implementation of their productivity measures.

The more an organization or unit becomes involved in the development and implementation of their own productivity measures, the more likely the measures are to be useful to both that organization and higher management. For this reason, the organization or unit concerned should be given the responsibility for developing its productivity measures. In cases where measurements would be applicable to many similar organizations, however, development should be coordinated at a higher level (e.g., System Commands) to ensure consistency.

In the past, higher management has frequently imposed productivity reporting requirements on organizations without involving the units concerned. The measures imposed under these conditions are often resisted because they are viewed as being unrealistic or irrelevant. In many cases, the organization or unit concerned reacts by developing dual measurement systems--one for the reports required by higher management, and the other for local use. If the required reports are seen as irrelevant, little care and attention will be given to their preparation. As a result, they often become unreliable and, occasionally, fraudulent. When the measures and reports are seen as providing realistic information, however, they become valuable to the management of the organization itself and, as a result, are more likely to be carefully and accurately prepared. In addition, when organizations are rewarded for improving productivity rather than punished for a lack of it, the measures used will be more acceptable.

3. Productivity measures should be developed at each organizational level having control and/or discretion over the measurable output.

In cases where individuals act somewhat independently within a group, productivity measures should reflect individual output. In cases where groups of individuals are involved in highly cooperative or collaborative activities, the measures should reflect the output of the lowest feasible group having control or discretion over the output.

When productivity measures reflect the efficient use of the resources over which the individual, group, or organization actually have control, their motivational and directive impact increases dramatically. For example, if a work group's output is constrained by the flow of work into the group, its labor productivity (output per man-hour) may be constrained. Group members may become discouraged when their attempts to increase productivity by decreasing the actual time required to perform available work are not reflected in the output per payroll hour. As a result, they may tend to deny responsibility for failure by blaming someone or something else. When group productivity is based on the actual man-hours expended by group members in providing the output, however, their attempts to improve efficiency will visibly impact on their measured productivity and will be more likely to increase their motivation.

Comparing these two methods of productivity measurements can be useful in identifying bottlenecks and coordination problems. When the hours spent in actual production are much lower than the payroll hours, immediate action should be taken to increase the flow of work into the group or to assign group members to other activities. Production measures used to evaluate higher levels of management, where the inputs to the group are controlled (e.g., staffing levels, etc.), should be based upon the actual output per payroll hours.

REWARDS AND INCENTIVES FOR PRODUCTIVITY IMPROVEMENT

It has been shown repeatedly that people are motivated to increase their productivity when they are rewarded for it or when they find it enjoyable. Conversely, they tend to decrease their productivity when their efforts to improve are punished or when they find the task boring or unpleasant. Thus, it is apparent that motivation to increase productivity is tightly linked to rewards, incentives, punishment, and disincentives. Rewards and incentives can take many forms, including money, recognition, autonomy, increased responsibility, increased leisure time, task accomplishment, social approval, and reduced effort. Punishers or disincentives include lost pay, disciplinary action, social disapproval, increased effort, reduced freedom and responsibility, and boredom.

Although those rewards and incentives identified as important to employee motivation are generally available to the Navy, its use of them to increase productivity has generally been either ill-considered or poorly executed. Too often in the past, improvements in productivity have been punished while inefficiency has been rewarded. For example, a civilian manager or supervisor who increases productivity may be punished by having his grade level reduced because his work force decreased as a result of increased efficiency. Conversely, an inefficient manager or supervisor may be rewarded by having his position upgraded because his work force increased to handle the workload. The appropriate use of rewards and incentives has great potential for increasing productivity in the Navy. The following recommendations should allow the Navy to make greater use of that potential.

1. Regulations and instructions on incentive awards should be rewritten to ensure that individuals and groups who increase their productivity receive timely and valued rewards.

Navy military and civilian personnel often see that valued rewards result from such factors as longevity or increased knowledge rather than from productivity. Mechanisms are needed to ensure that improved productivity is rewarded. Individuals will be motivated to improve productivity when they believe that such improvement will be in their own best interest as well as that of the organization. However, the rewards must be significant enough to be worth the effort.

Chapter 451 of the Federal Personnel Manual (Incentive Awards), provides a great deal of flexibility in the use of incentive awards--both monetary and honorary--to recognize productivity improvement in the civilian workforce. Although guidelines for using these awards and award tables are provided, each agency has the option to modify and develop its own award program within fairly broad limits. Within these limits, "Special Achievement" awards can be made to individuals or groups when their contributions result in unusual benefits to the government. In the past, these awards have typically been made for beneficial suggestions; however, they can also be given when the productivity of an individual or group exceeds standards. In such cases, a share of the savings realized by the above-standard performance can be awarded to the individual or group responsible.

The Navy has not yet realized the maximum benefit from this provision because interpretation of the relevant instructions and regulations has been too restrictive. For example, the same award tables are used for both beneficial suggestions and for benefits that accrue from employee efforts to be more efficient. As a result, both the employee who makes a one-time suggestion and the individual or group who makes a persistent effort to perform above standards are rewarded by giving them up to 10 percent of the tangible benefits accruing to the government. While this amount may be sufficient to induce suggestions, it is seldom enough to motivate individuals and groups to maintain productivity at above-standard levels. Experience has shown that such improvements can be sustained only when 30 to 50 percent of the saved base salary or wages is shared with the employee. In some cases, smaller sharing rates have been successful, but only when a bigger "cost" base is involved; that is, one that includes such factors as overhead and acceleration costs. In such cases, the actual sharing rate has been equivalent to 30 to 50 percent of salary. When these sharing rates are used, it means that an individual who performs, on the average, 110 percent of standard production over a period of time should receive an incentive award of 3 to 5 percent of wages or salary for that period. Under such a system, nothing is paid to the employee unless savings are realized, and then the organization retains 50 to 70 percent of all wage or salary savings plus 100 percent of the non-salary savings (e.g., acceleration and overhead).

The simplest way to improve the incentive award system would be to rewrite the instruction on incentive awards to include a separate sharing rate table for tangible productivity improvements that result from employees performing above standards. The tabled values should share with those employees a minimum of between 30 and 50 percent of the savings in average salary for employees in their position. Of course, reasonable productivity measures and standards must be developed to support this kind of program.

In addition, the procedures and methods used to make these awards and payments should be streamlined to reduce the delay between the employee improvements and awards to a minimum. The shorter the delay between the contribution and the award, the more effective the award will be.

While money is an important reward, it should by no means be considered the only one or necessarily the best. When an employee's financial needs are satisfied through basic compensation, the impact of financial rewards as an incentive may diminish. In such cases, other rewards could be given, such as a share of the time "saved" as time off with pay. Currently, this practice is not legally permitted for civilians, but it does represent a potentially powerful reward. Other possibilities include training and development opportunities, merchandise rather than cash, recognition, and honors. Finally, similar incentive awards for productivity improvements should be available to all personnel doing the same tasks, regardless of whether they are military or civilian.

2. Actions should be taken to ensure that productivity improvements are not followed by disincentives or negative consequences.

Attempts to encourage productivity improvements are often unwittingly neutralized by organizational practices that punish those attempting to improve productivity. For example, managers are often faced with ceiling point reductions

(as an efficiency move) that do not take into account their current state of efficiency. Such reductions naturally affect the more efficient operations more than those that are "fat." Since most managers feel these reductions are distributed arbitrarily, they tend either to "hide" any productivity improvements so they will be able to absorb the reduction without difficulty, or they make no attempt to increase productivity until the reductions are imposed. The manager using the first strategy faces problems of inequity and poor employee work habits, while the manager using the second is likely to meet the requirements for increased productivity with resistance and a "can't be done" attitude. Similar problems occur at the worker level when productivity improvements stemming from increased employee efforts (rather than technological improvements) result in an increase in productivity standards or in a reduction in force (RIF). To avoid these negative outcomes, employees are likely to withhold their effort or to restrict their output.

These disincentives can be avoided through the following actions:

- Organizations or units that have both acceptable productivity measures and successful productivity improvement programs must be assured that they will not be faced with externally imposed ceiling reductions. To give this assurance, it may be necessary to reach agreement on this principle with Congress, the Office of Management and Budget, and DoD.
- A proportion of the personnel "savings" resulting from locally developed productivity programs should be "shared" with the organizational unit responsible, to be used at their discretion in fulfilling needed functions.
- Supervisors and managers must be assured that they will not be downgraded when their efforts to increase efficiency result in a reduction in the number of employees they supervise. In general, the methods used to determine civilian grade and salary should be reevaluated to ensure that they clearly reward managerial efficiency rather than inefficiency.
- Local commands should be instructed that, once productivity standards have been set, they should not be raised as a result of productivity increases due to worker efficiency or effort.
- Finally, when increased productivity results in surplus personnel, reductions should be accomplished through reassignment, attrition, or other alternatives to RIF.

3. A job redesign program should be developed.

When individuals feel that job performance results in personal growth and development, they typically will attempt to maintain relatively high levels of productivity. On the other hand, when they feel that their job is excessively repetitive and routine, presents little challenge, or is unpleasant, their productivity will suffer. Therefore, a determined effort should be made to ensure that Navy tasks offer the degree of enrichment best suited to the individuals typically performing those jobs. This will require (1) an evaluation of Navy tasks to determine which jobs should be enriched, and (2) development of methods of redesigning those jobs where enrichment is likely to result in productivity improvements. In many instances, it will be necessary to call upon experts from outside the organization to survey and develop enrichment opportunities.

4. Personnel performance appraisal systems should better reflect individual productivity.

The evaluation systems used to appraise military and civilian personnel (fitness reports and performance evaluations) have been criticized repeatedly by both management and employees as being undifferentiating and of questionable value. For the evaluation process to have an impact on individual motivation, supervisors must have available appraisal tools that are meaningful and applicable to the individuals and their tasks. Although many attempts have been made to improve performance appraisal systems, little progress has been made.

The Civil Service Reform Act of 1978 now requires that performance appraisal systems be developed that establish "performance standards . . . on the basis of objective criteria related to the job in question for each employee . . ." (Although this requirement applies only to civilians, it appears that it would also be useful in military evaluations.) The performance appraisal tools for both military and civilians currently being used do not meet this criterion because they are highly standardized and general and therefore quickly become pro forma exercises. Thus, tools and methods must be developed that help supervisors identify specific, concrete, and measurable criteria to evaluate individuals. These criteria must be closely tied to the productivity and work quality measures developed for an individual's organization or work group, and must be specific to work being carried out by the employee whether he is military, civilian, blue or white collar. Once these criteria are identified and employed, frequent feedback on current performance must be provided to individuals if the criteria are to be maximally effective. Further, an employee's performance should have more impact on reward systems. For example, incentive awards and step increases should be tied to performance ratings.

In areas where work outcomes are difficult to measure or where the performance criteria are complex (e.g., those for research and development scientists), it may be more effective to establish peer review systems for appraising performance. It has been shown that such systems, which use pooled judgments, provide increased reliability and validity. In some organizational units, the use of outside expertise may be required to help develop such systems.

MANAGEMENT AND SUPERVISION

The quality of management and supervision within all military organizations, whether they are headquarters, operational, logistics, or R&D units, plays a vital role in productivity. Productivity can be enhanced by improving the quality of military management in general and the ability of military managers to develop and carry out productivity enhancement initiatives in particular. The enhancement of productivity is fundamentally a line management function, and any productivity program that overlooks this fact is destined to fail.

For purposes of this section, the term "management" is used to encompass all levels of management. In the actual implementation of the following recommendations, however, the specific level of management involved must be considered.

1. Managers should be selected, developed, and appraised based more on managerial factors than on technical factors.

Most jobs in the military sector are highly technical; they typically involve either skilled blue-collar tasks or science and engineering. The most common problem with many managers in the military sector arises from the fact that they were promoted because of their technical competence. Such managers typically tend to spend time on technical matters, sometimes neglecting such managerial aspects as personnel administration, financial management, motivation and development of employees, procurement, and time management. Moreover, most have not received adequate training or development in these managerial functions. This problem seems to be particularly acute in the first-line, wage-board, supervisor level.

To rectify this general situation, managers should be (1) selected on the basis of their management potential as well as on their technical accomplishments, (2) given classroom training and/or on-the-job development to enhance managerial skills, and (3) rewarded for developing and using these skills. One possibility for making improvements in this area is through the use of assessment centers, where job candidates are intensively evaluated on those skills required by the job in question. AT&T, for example, has had considerable success using this procedure. Although the Office of Civilian Personnel, after a preliminary evaluation of this approach, questioned the feasibility of its use for the Navy due to its high cost, a more intensive study should be made of its possibilities. Also, the newly passed Civil Service Reform Act will be helpful, in that it allows for a probationary period for newly appointed supervisors. This probationary period gives the organization an opportunity to evaluate the individual's performance as a supervisor; and the individuals, to determine whether they wish to remain in their new role.

A number of initiatives have been taken within the Navy recently to improve management training and development. Examples include an evaluation of the training and development needs of the Navy's civil service executives, and a program for the selection, development, and appraisal of managers in the laboratories of the Naval Material Command. Additional initiatives of this kind should be supported. Furthermore, initiatives should be undertaken to instigate and

improve management development at the first-line supervisor level. It is important that such developments include specific training in productivity enhancement.

2. The relationship between local management and local representatives of civil service unions should be enhanced.

Traditionally, unions often have impeded productivity initiatives. A major reason for this is because they perceive such initiatives as managerial attempts to get more work from the workers for the same wage. These suspicions are not always unfounded. To make matters worse, managers are often not sufficiently knowledgeable about the provisions of the union contract, thus creating additional friction between the two groups. This is another reason for the need to place increased emphasis on the managerial (rather than technical) responsibilities of managerial jobs (as noted above).

Despite the historical background of labor-management distrust, there have been instances of labor-management cooperation that have resulted in significant productivity increases. For example, the National Quality of Work Center (a nonprofit organization affiliated with the University of Michigan) has sponsored a series of projects in unionized firms that have resulted in simultaneous improvements in both productivity and quality of work life. One such project was conducted at the Harman International auto mirror plant in Bolivar, Tennessee. With the assistance of an internal consultant, management and the local union collaborated to create a mechanism to allow employees to redesign their work. As a consequence, many work groups began to reach the 8-hour standard in 5 or 6 hours; savings accrued were shared with the employees. Moreover, no negative effect on the collective bargaining process was observed. Also, some Air Force activities, aided by the U.S. Government's National Center for Productivity and Quality of Work Life, have successfully implemented labor-management councils. These efforts, and others like them, should be studied to see how they could be applied to other military organizations.

3. The turbulence due to the rotation of military officers and noncareer appointees should be reduced.

It may not be possible to reduce the turbulence associated with the rotation of noncareer appointees. The major source of turbulence in the DoD, however, is caused by military rotation, which can be influenced by policies set within the military structure. While rotation is, and probably always will be, an integral part of the military system, the turbulence accompanying rotation can be reduced considerably by increasing the length of military assignments. Typically, military officers are not in one position long enough to allow them to develop and follow-through on productivity programs. Some of this problem can be solved or alleviated in the individual commands merely by not rotating officers among different jobs during their tour of duty. Not only should the officers' average assignment be lengthened, but they should be encouraged by their military superiors to carry out productivity programs initiated by their predecessors rather than to change course in midstream. In the fleet, such encouragement should come from the Type Command level or above. In the NAVMAT community, it should come from the upper echelons of the Systems Commands, as well as from NAVMAT headquarters.

Another approach to reducing military turbulence would be to create a clear officer career pattern for those who will ultimately command shore establishment organizations. At present, many officers who assume command responsibility of organizations staffed primarily with civilians have little preparation for the job. Although they may have extensive experience with the operational side of the military forces, they are not sufficiently familiar with problems related to such areas as financial management, civilian personnel administration, and contracting. This lack of knowledge exacerbates the military-civilian relationship and can negatively affect the productivity of civilian employees. A full description of this problem, plus recommendations for dealing with it, can be found in an article entitled "Managing the Shore Establishment," by Captain Howard Norman Kay, USN (United States Naval Institute Proceedings, December, 1977).

4. Civilian managers should be provided with more and broader developmental experience.

The exact opposite problem from military turbulence exists among DoD civilian managers: many spend their entire career within one niche. Even if they are promoted a number of times, they tend to continue to work in one technical specialty within one organizational subunit. Although this stable civilian managerial structure is needed to provide the continuity to counterbalance the military rotation, too much parochialism impedes the effectiveness of some civilian managers. Initiatives have been taken in an attempt to solve this problem. For example, a system has been proposed that would encourage managers within the Naval Material Command laboratories to obtain headquarters experience by accepting temporary rotational assignments. Also, an executive development program for Navy civilians is tentatively scheduled to begin at the Naval Postgraduate School in 1979. Such initiatives should be supported.

5. The interaction between military and civilian managers who work together should be improved.

In many instances, "military-civilian" manager interaction is very poor, and the resultant lack of military-civilian teamwork degrades productivity. This problem was described during the conference as an area in need of major attention on a number of fronts.

The Navy recently has undertaken a reorganization, moving the central civilian personnel administration body under the military chain-of-command; this may help to alleviate the problem. It is important that a sense of military-civilian teamwork be fostered at the headquarters level to set an example for managers at lower levels and in the field, where the interface problem is most acute. Other approaches to this problem include: (1) reviewing the allocation of managerial functions in the field organizations beset with civilian-military interface problems (e.g., public works, supply, and overhaul activities), and (2) encouraging military and civilian managers to attend management training classes together. Such classes should include material on the nature of military-civilian interaction and methods for resolving the conflict associated with it.

MANAGEMENT CONTROL SYSTEMS

Typically, large organizations use regulations to direct and control operations, and then initiate inspection-type actions to determine whether regulations are being followed. Without these control methods, it is unlikely that adequate efforts could be concentrated and directed toward organizational goals. In the military however, the number and detail of these controls appear to be excessive and ever-increasing. One report indicates that there are at least 60 required inspections, assist visits, or certifications imposed annually upon units in CINCPACFLT, and that most of these require written managerial reports. This creates serious problems in commands, particularly operational units, especially where requirements are contradictory and unclear. Even worse, when "short fuse" requirements are presented, they must be given priority over ongoing, routine, or planned tasks. In this case, resources must be diverted, and priorities and schedules must be juggled; hence, productivity suffers. This excessive amount of external managerial control or "micromanagement" was identified as a major problem by almost all of the conference working groups. Several recommendations are presented to reduce the amount of these counterproductive incursions into military units.

1. The number of inspections, audits, reports, etc., imposed on commands is excessive and needs to be sharply reduced.

It is essential that the reporting requirements be systematically evaluated for the purpose of either eliminating reports that provide excessively detailed information or changing the requirements of these reports so that necessary information can be combined into less time-consuming aggregated indices of unit performance. A logical step would be to establish a centralized location where all requirements imposed on commands can be coordinated, aggregated, prioritized, and evaluated--perhaps under the auspices of CNO (OP-09). By tracking reporting requirements in terms of their impact on productivity, it may be that many of them can be eliminated. In fact, since the productivity conference in April 1978, CNO has concurred with recommendations to cancel 94 recurring reports and is considering eliminating or reducing the frequency of a number of others. Including accounts of resources needed to produce reports (e.g., man-hours required) in the report itself may influence CNO's decision of whether or not to continue the requirement.

Conference participants suggested two possible methods for reducing the number of inspections and requirements at the CINC level or higher. In the first method, a formalized cosigned check system would be used, whereby staff personnel would be required to jointly sign off reporting requirements. This would allow reports to be coordinated, and could lead to integration or reduction of duplicate or overlapping requirements. In the second, a "sunset" clause, stating the length of time the report is required (e.g., 1 year), would be included in the requirement statement. At the end of the stated period, the requirement would automatically expire unless renewed for another period.

2. Managerial control systems should be decentralized as much as possible.

The lack of individual managerial controls within an organization is evident in both the civilian and uniformed forces, even though the method and amount of controls from higher levels differ. In the civilian area, arbitrary controls

are often set over ceiling and grades that are quite independent of the funding allocation. Implementation of a productivity enhancement program under such conditions of mismatched resources (i.e., funds and personnel) is extremely difficult. (Suggestions for changes in controls over ceilings and grades under productivity enhancement programs are provided in the section of Rewards and Incentives for Productivity Improvement.) Managerial control is also restricted by the cumbersome personnel hiring and termination policies. The recent Civil Service Reform Act recognizes the constraints on managers imposed by such policies, and provides for simplification of the complex federal personnel system, for decentralization, and for delegating authority to individual organizations as much as possible. Finally, additional latitude in the use of incentives and discipline procedures would increase managerial control. For example, under the Civil Service Reform Act, policy requires that GS-13 through GS-15 managers and supervisors be given step increases based on merit rather than automatically. Discipline procedures such as probation or termination should be simplified so that there are significant consequences for ineffective employees.

In the uniformed services, managers are generally held accountable for their actions, but they are so controlled that they have little latitude in pursuing new directions for productivity improvement. Typically, military managers report that micromanagement indicates a lack of trust and confidence in their ability to make decisions. In addition, short rotation cycles may adversely affect improvements in productivity. Using productivity and effectiveness data as the basis of accountability, managers should not only be held accountable for the overall performance of their units but should also be given control over resources that determine that performance. Further, they should be given sufficient time to observe the impact of their managerial practices.

RESOURCES AND CAPITAL INVESTMENT

An attempt to increase an organization's productivity must consider the availability of resources, both material and human, necessary to the productive process. Within military organizations, the scarcity of resources is a continuing problem. With regard to human resources, it is difficult not only to get sufficient numbers of qualified people, but also to optimize the "match" between people and jobs. With regard to material resources, capital investment emerged during the conference as an important issue. The lack of efficient equipment or required material often results in the waste of expensive man-hours. Capital investment not only influences productivity directly but also indirectly--by affecting work motivation: Employees are demotivated by obsolete equipment, defective vehicles, and marginally habitable facilities.

1. Funding for labor and material-saving fast-payback capital investment should be increased.

In the past, Congress has made funds available to the military services for fast-payback capital investments; that is, those that pay for themselves in 2 years. Despite the initial success of this program, Congress has cut this funding down to a miniscule level. The appropriate Congressional committees should be made aware of the program's success and future potential so that funding will be increased. In lieu of Congressional support (or perhaps in addition to), the possibility of the military services setting up their own revolving fund to finance fast-payback capital investments should be investigated.

2. Long-term capital investments in military facilities and equipment must be increased.

Many of the military sector's physical facilities and equipment are in very poor condition due to an extended lack of needed capital investment. This is particularly true of maintenance and other support-type activities. Some facilities and equipment have deteriorated to the point where it is highly probable that their negative effects on productivity are far more costly than the amount it would take to upgrade them to an acceptable level. To deal with this problem, two steps might be taken. The first is to document, in a cost-benefit fashion, those instances where it would be cost-effective to make such long-term investments. To obtain the data for such documentation, the organizations under study (and their parent commands) must be convinced that they will be rewarded (or at least not punished) for providing accurate data. The second step is to convince the appropriate Congressional committees of the savings to be realized and of the value of sharing the savings with the organizations generating them.

3. The personnel assignment system should be improved so that assignments are more beneficial to both the organization and the individual.

Numerous efforts to improve the capabilities of the military personnel assignment system have been made. Despite these efforts, however, there is a widespread perception that personnel assignments are inefficient and insensitive to the requirements and needs of both the Navy and the individual. Efforts should therefore be expanded to improve military assignment methods through optimal assignment models and computer-assisted matching of personnel

and billets. Also, a feedback system should be designed to identify effective and ineffective assignment procedures.

On the civilian side, the major assignment problem seems to involve the timely hiring of qualified employees. Managers and supervisors have great difficulty obtaining properly qualified people due to the length of time required to hire someone, the inadequacy of the current Civil Service job categorization for some specialized tasks, and the inability to give job sample tests. For example, it can be extremely difficult to hire qualified marine pipefitters because the Civil Service job qualification criteria do not adequately distinguish between marine pipefitters and residential plumbers. As a result, qualified pipefitters or apprentices are not accessible for hiring because residential plumbers with more experience are ahead of them on the register. Likewise, data processing key entry operators are placed on the register partly because of demonstrated typing skill, although key entry is a substantially different task than typing.

RESEARCH AND DEVELOPMENT

Many actions that can and should be taken to improve motivation and productivity have been identified, but much remains to be learned if needed progress is to be made. Therefore, both a commitment to and investment in research and development (R&D) are necessary. Experience in both the private and public sectors has shown that progress in both technology and productivity is directly related to the amount and consistent commitment of R&D funds to the productivity problem.

The military services have supported R&D in a variety of areas for many years. With a few exceptions, however, relatively little has been devoted to R&D directed toward methods and techniques for improving productivity. Moreover, most military organizations generally have been reluctant to permit internal experimentation.

1. Support for coordinated research and development programs in productivity improvement should be increased.

If progress is to be made in discovering new and better ways to increase productivity, experimentation in and evaluation of productivity enhancement efforts must be increased. To do this, efforts should be better coordinated and financial resources increased. R&D efforts should include the development of improved technology and labor-saving equipment to enhance productivity, an area that has received very little support in the past. In addition, increased emphasis should be directed toward R&D in methods to improve employee efficiency. Better methods are needed for selecting, organizing, supervising, motivating, and evaluating individuals if the efficiency of Navy organizations is to reach required levels with no loss in output quality. To realize these objectives, funding for an identifiable program of R&D in support of productivity improvement must be specified.

2. The relationship between productivity R&D and the Navy's operational and support activities should be strengthened.

In the past, attempts to conduct productivity R&D in Navy organizations have often been resisted by those operational commands whose cooperation is required to conduct the R&D. Those engaged in R&D are accused of being "hobby shoppers," apparently because operational managers feel that their efforts either are not relevant to the Navy's problems or are unlikely to produce anything of value. Part of the blame for this problem can be placed on researchers, who either attempt to find solutions to problems that operational managers do not feel are important or who have difficulty in explaining to these managers the likely benefits of their research. Part of the blame can also be placed on operational managers, who either don't want to be bothered with something that isn't going to help solve "today's" problems or who are unconcerned about the problem that might be solved. This is, at least in part, a result of the short tenure, and hence the short time perspective, of uniformed officers.

In an effort to bridge this gap between the R&D and operational and support activities, the following steps should be taken:

1. High-level Navy management should (a) encourage Navy commands to participate in productivity-related R&D, and (b) recognize and reward subsequent participation.

2. Formal liaison should be established between the Navy's Productivity Coordination Council and/or Productivity Principal and those conducting significant productivity R&D efforts. This would help ensure that (a) productivity R&D is sensitive to vital areas and (b) direct input to the productivity program is provided through expertise in the R&D community.

3. Successful efforts to increase productivity through R&D should be publicized to operational commanders and to military managers.

4. Operational commanders at all levels and military managers should be encouraged to consult with experts in the R&D community to identify and evaluate ideas they may have for improved productivity.

SUMMARY OF RECOMMENDED ACTIONS

The following is a listing, by problem areas, of recommended actions.

Productivity Program Management

1. The Navy's productivity program must receive top level support.
2. The program should be considered and developed as a long-term program.
3. Experimentation and inventiveness should be encouraged.
4. Both employees and management should participate in program development.

Productivity Measurement

1. A board of experts in productivity measurement should be established.
2. Affected organizational elements should participate in the development of productivity measures and implementation plans.
3. Productivity measures should be developed at the organizational level(s) having discretion over the measurable output.

Rewards and Incentives for Productivity Improvement

1. Incentive award regulations and instructions should be rewritten.
2. Disincentives and negative consequences of productivity improvement should be eliminated.
3. A job redesign program should be developed.
4. Personnel performance appraisal should be more closely tied to productivity.

Management and Supervision

1. Increased emphasis should be placed on managerial factors in the selection, development, and appraisal of managers.
2. Training in labor management relations and the use of labor management councils should be increased.
3. Turbulence due to military rotation should be reduced by lengthening tour assignments.
4. Management development programs for civilians should be expanded.
5. Military/civilian manager interaction should be improved.

Management Control Systems

1. The number of inspections, audits, and reports required of commands should be reduced.

2. Management control systems should be decentralized.

Resources and Capital Investments

1. Fast-payback capital investments funding should be increased.
2. Long-term, productivity-enhancing, capital investments should be increased.
3. Advanced technologies and methods should be developed and applied to the problems of civilian selection and placement and military personnel assignment.

Research and Development

1. Support for coordinated R&D programs in productivity improvement should be increased.
2. R&D productivity efforts should be coordinated with operational and support activities.

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